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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/820,037	04/08/2004	Won-jun Koh	1572.1264	7587
21171	7590	06/18/2007		
STAAS & HALSEY LLP SUITE 700 1201 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			EXAMINER PECHE, JORGE O	
			ART UNIT 3661	PAPER NUMBER
			MAIL DATE 06/18/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/820,037

Applicant(s)

KOH ET AL.

Examiner

Jorge O. Peche

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☒ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> | 6) <input type="checkbox"/> Other: _____ |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :12/06/2006, 08/18/2006, 12/20/2005, 04/08/2004.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims **1-7, 10, and 15** are rejected under 35 U.S.C. 102(b) as being unpatentable over **Paromtchik et al. (Pub No.: US 2002/0027652 A1)**.

Regarding **claims 1, 5-7 and 15**, Paromtchik discloses an instructing target positioning system for mobile body comprising:

- Light beam (light commander) projected on the surface to command a mobile robot to a new location (see page 2, par. 25; page 4, par. 55-58, Figure 1).
- A sensor unit (12a) (optical device) to receive and detect light beacon position having specified features (see page 2, par. 29; page 4, par. 68; Figure 3).
- A controller unit (12d) (image processor) to process sensor (12a) data, calculate the relative coordinate of positions where the light beacons reside, and generate command signals to a server unit (12b) to move the robot to a relative position (see page 2, par. 33; page 5, par 69-71; Figure 3).

Regarding **claim 2**, as Paromtchik discloses a light beam having a predetermined features that are projected on the surface on which mobile bodies are to be transferred

in an environment and a control unit (12d) to process sensor (12a) data and generate command signals to a server unit (12b) to move the robot to a relative position (see page 5, par 69-71; Figure 3), it would be inherent for the control unit (12d) to store in its memory a program to correlate light beam and command signals to drive the robot to a relative position.

Regarding **claims 3 and 4**, Paromtchik discloses a laser unit (16a) to project a laser pointer on a surface (three dimensional space) (see page 4, par 54-58; Figures 3).

Regarding **claim 10**, Paromtchik discloses a method for instructing target position for mobile bodies comprising the set of:

- Providing a light beam (light commander) projected on a surface to command a mobile robot to a new location (see page 2, par. 25; page 4, par. 55-58, Figure 1).
- Having a memory, inherently located in the control unit (12a), for storing a program to correlate light beam and command signals to drive the robot to a relative position (see page 4, par. 57-58, 68; page 5, par 69-71; Figure 3).
- Detecting the position of light beam in a predetermined time interval (see page 2, par. 29; page 4, par. 68; Figure 3).
- Determining the feature of the light beacon such as color, shapes, brightness, and manners of lighting (see page 2, par. 33-34). Under this process, it would be inherent that the control unit (12a) would determine reflecting trace based on multiple variation of reflecting position with in a predetermined interval.

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- Controlling the motion of a robot by processing optical signal (sensor unit (12a)) received from the reflected light beam and calculating the relative coordinate of positions where the light beacons reside (see page 2, par. 33; page 5, par 69-71; Figure 3).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims **8-9** and **11-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Paromtchik et al. (Pub No.: US 2002/0027652 A1)** in view of **Bartsch et al. (Patent No.: US 6,459,955 B1)**.

Regarding **claim 8**, Paromtchik discloses a sensor unit (12a) (optical device) to detect light beacons having specified features (see page 2, par. 29; page 4, par. 68; Figure 3).

However, Paromtchik fails to disclose a mobile robot comprises a cleaner.

However, Bartsch teaches a home cleaning robot comprising a cleaner (see abstract; column 2, line 58- column 3, line 18).

Regarding **claim 9**, Paromtchik discloses a light beam having a predetermined features that are projected on the surface on which mobile bodies are to be transferred, and a control unit (12d) to process optical signal, sensor unit (12a) output (optical

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device), received from light beams and generate command signals to a server unit (12b) for moving the robot to a relative position, which can be enclosed in a given area (see page 5, par 69-71; Figure 3).

However, Paromtchik fails to disclose a robot system to clean an area.

However, Bartsch teaches a home cleaning robot comprising a cleaner to clean a home area (see abstract; column 2, line 58- column 3, line 18).

Given the teaching of Bartsch, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Paromtchik's invention to incorporate a vacuum cleaner in a mobile robot.

Doing so would enhance a home cleaning robot capable of learning and adaptively performing useful functions.

Regarding **claims 11-14**, Paromtchik fails to disclose a method wherein when the reflecting trace is not in accordance with the command pattern and draws a line segment, the mobile robot is controlled to move along the line segment, wherein when the reflecting trace is not in accordance with the command pattern and draws a closed loop, the mobile robot is controlled to enter an area formed by the closed loop, wherein when the reflecting trace is not in accordance with the command pattern and points to a point, the mobile robot is controlled to move to the point, and wherein a plurality of reflecting traces corresponding to a plurality of command patterns are combined and stored as a single command pattern in the memory.

However, as Paromtchik discloses a light beam having a predetermined features such as color, shapes, brightness, and manners of lighting on (plurality of command

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features) and a control unit (12d) capable to store in a memory a program to correlate light beam and command signals to drive the robot to a relative position (see page 2, par. 33-34; page 5, par 69-71; Figure 3), it would have been obvious to one of ordinary skill in the art at the time of the invention was made to implement light beams to draw close loop and point to point features to command the robot to enter the close loop area or approach the point feature. Furthermore, as the robot implement optical devices such infrared sensor, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to adjust the computer program to ignore/eliminate external reflected trace such as sun and lamp lights to allow the robot to complete its trajectory (moving along a line segment).

Doing so would enhance a mobile robot navigation system capable to reduce navigation error due to external light source and optimize the robot performance.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jorge O. Peche whose telephone number is 571-270-1339. The examiner can normally be reached on 8:30 am - 5:30 pm Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas G. Black can be reached on 571-272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Jorge O. Peche

Patent Examiner
Art Unit 3661
June 8, 2007



THOMAS BLACK
SUPERVISORY PATENT EXAMINER